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10/500,616	06/29/2004	Tsepin Tsai	Evionyx-0064USAAON37	4327
26665	7590	03/28/2007		
REVEO, INC. 3 WESTCHESTER PLAZA ELMSFORD, NY 10523			EXAMINER WANG, EUGENIA	
			ART UNIT	PAPER NUMBER
			1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/500,616

Applicant(s)

TSAI ET AL.

Examiner

Eugenia Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/29/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

\*Priority is not perfected. A certified translation is needed.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

3. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15. (Form Paragraph 02-19).

### ***Information Disclosure Statement***

4. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered (form para. 06-49-06). Examiner invites applicant to submit a formal information disclosure statement for examination.

***Drawings***

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: [100] (p 2, line 14) and [200] (p 7, line 21). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: [206], [402], [406], [410], [412], [502], [510], [512], [602], [604], [608], [610], [612], [710], [712], [806], [810], [812], [910], and [912]. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top

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margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

7. Absent the submission of a separately written abstract, the abstract provided with the international filing will be used.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by US 002/0160247 (Tzeng et al.).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

As to claim 1, Tzeng et al. teaches a metal-air cell system. All of the components can be seen in fig. 1 - a pair of cathode portions [2] and a pair of anode portions [4] in ionic communication via electrolyte [6] (para 0063). The electrochemical cell also has a wedge-shaped embodiments, where the pair of cathodes are angled (as can be seen in

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figs. 2-8). In one such embodiment, the cathode structure [312] includes a compressible (collapsible mechanism), and accordingly expandable support structure having one or more cathodes thereon (fig. 8A-9B; para 0108, lines 1-4). The support structure is constructed with compressible sub-members like springs and elastomeric material (para 00108, lines 8-15). Although not shown in a specific embodiment, Tzeng et al. teaches that the metal air cell can be rechargeable, a fact that is said to be obviated, and that a third electrode serves as a charging electrode (para 0080, lines 10-15). (This third electrode is inherently in ionic communication with the anode for recharging purposes.)

As to claims 2-4, Tzeng et al. teaches the cathode compressible support. It is further noted with the embodiments of figs. 42B-C that the cathode structure [52] is reactive to pressurization and depressurization in of the battery, in particular that of the introduction of oxidant to the system (para 00135). Therefore the system would be capable of: (a) contracting the cathode portion to facilitate oxygen bubbling during charging (as applied to claim 2), (b) contracting the cathode portion to cut off air supply during charging or during idle periods (as applied to claim 3), and (c) expanding the cathode portions to open more space for the air channel to supply air/oxygen during discharging (as applied to claim 4).

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art

structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to claim 5, Tzeng et al. teaches that in figs. 2A-5, the cathode [10] in electrochemical cell [42] may be supported by wedge shaped structure [12], which facilitates the removal of the cathode structure (para 0065).

As to claim 6, in with respect to fig. 1, Tzeng et al. teaches that it is desirable to replace anode portions [4] and that various mechanical structures may be employed to physically remove the anode portions [4] from housing [8]. As for the wedge-shaped embodiment, it was previously stated that Tzeng et al. teaches a cathode [10] in electrochemical cell [42] supported by wedge shaped structure [12], which facilitates the removal of the cathode structure (para 0065). This configuration allows for easy



accessing of the anode portions (para 0065, lines 3-5). Furthermore, in embodiment fig. 2C, open end [24] of casing [22] that allows for easy insertion of anodes (para 0067), thus allowing for the replacement of anodes when necessary.

As to claim 7, Tzeng et al.'s metal air cell has a collapsing mechanism that can contract, thus allowing it to be disconnected from the anode portions during idle or charging times.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

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The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural

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limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to claim 8, Tzeng et al. teaches a compressible support structure constructed with sub-members like springs and elastomeric material (para 00108, lines 8-15). This support structure serves as a collapsible mechanism, which is mechanical.

As to claim 9, Tzeng et al.'s compressible support structure is also electro-mechanical, as it reacts to internal pressure, which is indicated by oxygen/air flow (para 0135, lines 9-14). As oxygen/air is a reactant for the electrochemical cell, the system is electro-mechanical.

As to claim 10, Tzeng et al. teaches that the compressible support structure comprises of springs (para 00108, lines 8-15), which inherently return to their original form after expansion/contraction. Therefore, they are considered to be a shape memory alloy system.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4560626 (Joy) in view of US 5328777 (Bentz et al.).

As to claim 1, Joy teaches a metal air electrochemical cell with a pair of cathodes [24], anode portion [22], which are in electrical separation but ionic communication via the electrolyte (col. 3, lines 8-13 and 50-54, fig. 1). Additionally, the cathodes [24] have a mechanism (spring [40] and bladder [42]) between them that is capable of collapsing.

Joy does not teach the fact that the metal air cell is rechargeable and thus does not teach a set of third charging electrodes in communication with the anode portions. However, Bentz et al. teach that secondary cells, which are use rechargeable and useful for multiple charge and discharge cycles, have been developed for metal-air cells (col. 1, lines 37-42). The motivation for wanting to make the metal air battery rechargeable is to extend the life of the battery, and making a battery rechargeable

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would inherently require the third electrode set in ionic communication with the anode portions. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make Joy's metal air cell rechargeable (and thus providing a third set of electrodes) in order to lengthen the life of the battery.

As to claims 2-4, Joy's electrochemical cell has bladder [42], which is expandable in response to internal pressure (that may be operatively connected with air supply) (col. 3, lines 30-50). Therefore it would be capable of: (a) contracting the cathode portion to facilitate oxygen bubbling during charging (as applied to claim 2), (b) contracting the cathode portion to cut off air supply during charging or during idle periods (as applied to claim 3), and (c) expanding the cathode portions to open more space for the air channel to supply air/oxygen during discharging (as applied to claim 4). Rechargeability has been obviated with the rejection for claim 1, and the aforementioned conditions can be controlled by manipulating the internal pressure of the cell.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to claim 5, the cathode can be removed, replaced, and/or reconditioned. In the broadest interpretation, all batteries are inherently assembled and thus capable of being disassembled. Therefore the components of Joy are clearly removable, replaceable and/or capable of being reconditioned.

Alternately, a narrower interpretation can be put on claim 5. In this interpretation Joy does not specifically teach of removing, replacing, and/or reconditioning the cathode. However Joy teaches that a consumed anode can be readily replaced with a new one (col. 3, lines 20-26). Therefore there is motivation for providing the same function for the cathode as well. The motivation for providing a cathode that may be removed, replaced, and/or reconditioned is to lengthen the life of the battery as a whole by just replacing/reconditioning portions that are used up. This cuts down on the cost of replacing the whole battery system. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to provide a

battery system where the cathode can be removed, replaced, and/or reconditioned in order to provide for better use of the system as a whole and thus cut down wasting the working parts of the battery system

As to claim 6, Joy teaches that the cathodes [24] can be retracted with respect to the anodes [22] so that the anodes [22] can be removed and replaced via slot [34], which is normally closed off by seal [36] (col. 3, lines 1-9 and 18-30).

As to claim 7, Joy's metal air cell has a collapsing mechanism that can contract, thus allowing it to be disconnected from the anode portions during idle or charging times. (Rechargeability has been obviated by the rejection of claim 1.)

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a

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claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to claim 8, Joy's teaching uses the bladder [42] and springs [40] as a collapsible mechanism, which is mechanical.

As to claim 9, Joy's bladder [42] and spring [40] system is also electro-mechanical, as it reacts to internal pressure, which is indicated by oxygen/air flow (col. 3 lines 45-50). As oxygen/air is a reactant for the electrochemical cell, the system is electro-mechanical.

As to claim 10, Joy teaches that the collapsible system comprises of springs [40], which inherently return to their original form after expansion/contraction. Therefore, they are considered to be a shape memory alloy system.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugenia Wang whose telephone number is 571-272-4942. The examiner can normally be reached on 8 - 4:30 Mon. - Fri., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



EW

GREGG CANELMO  
PRIMARY EXAMINER

21 MARCH 2007